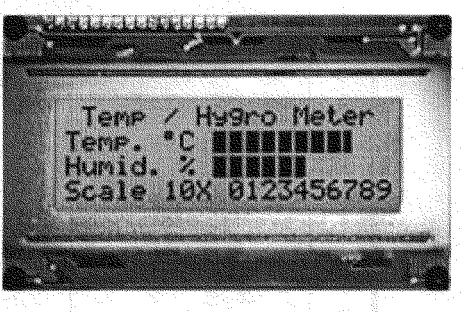
LK204-25

User Manual



Connecting LK204-25

Regular Voltage

Power is applied to the white or brown four pin SIP connector as follows:

```
Pin 1: +5Vdc
Pin 2: = SCL (I²C clock)
Pin 3: = SDA (I²C data)
Pin 4: Gnd
```

If the sole data source is via the RS-232, the data input is via the DB9 connector. Pins 2 and 3 are not used.

Wide Voltage Option (V)

Power is applied to the white or brown four pin SIP connector as follows:

```
Pin 1: +7 - +15Vdc
Pin 2: = SCL (I²C clock)
Pin 3: = SDA (I²C data)
Pin 4: Gnd
```

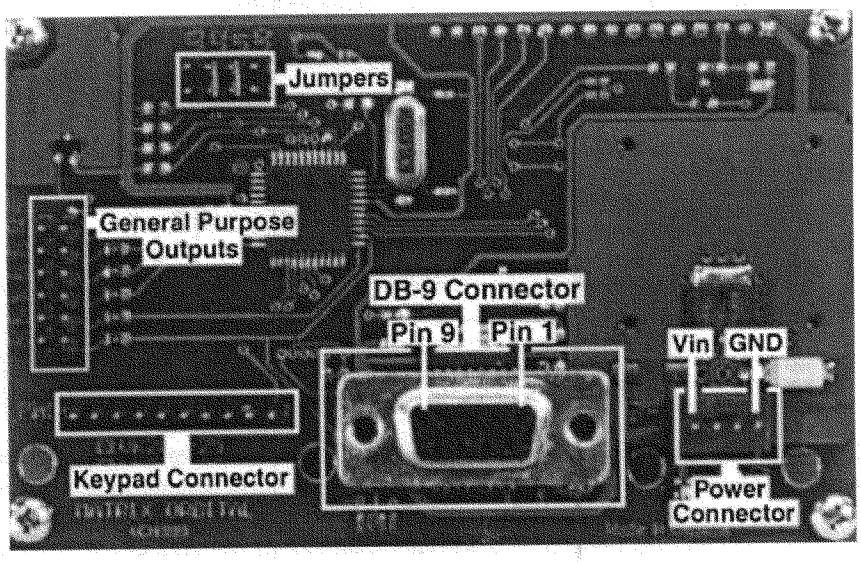
If the sole data source is via the RS-232, the data input is via the DB9 connector. Pins 2 and 3 are not used.

Wide Voltage Option (VPT)

Power is applied to the white or brown four pin SIP connector as follows:

```
Pin 1: +8 -  +30Vdc
Pin 2: = SCL (I²C clock)
Pin 3: = SDA (I²C data)
Pin 4: Gnd
```

If the sole data source is via the RS-232, the data input is via the DB9 connector. Pins 2 and 3 are not used.



Warning:

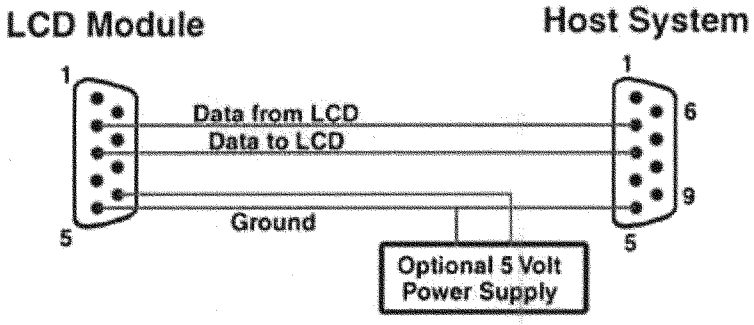
Do not apply any power with a reversed cable.
Do not apply an voltage other than the specified voltage.
Do not use any cables other than the cables supplied by Matrix Orbital, unless you are aware of the modifications required.
Do not under any circumstances use an unmodified floppy drive power cable.

DB9 Connector Pin Out

RS - 232 port: This connector is wired so that a standard "straight through" 9 pin D-sub cable may be used to connect the modules on a standard serial port such as comm ports on PCs. Note that this device complies to the EIA232 standard in that it uses signal levels from +/- 3V to +/- 12V. It will not operate correctly at TTL (0 to +5V) levels.

Pin Number	Description
2	Data Out
3	Data In
5	Ground
9	+5Vdc

Note: Signals are shown as interpreted by the Liquid Crystal Display module.



Power may be provided to the module by pin 9 of the DB9 connector instead of through the 4-pin SIP. If power is to be applied using the DB9, it must be a regulated 5Vdc supply. If the user intends to use pin 9 as the power source, the user must solder the 5 volt jumper point beside the DB9 connector. If you have any further questions or concerns don't hesitate to contact Matrix Orbital at support@matrix-orbital.com.

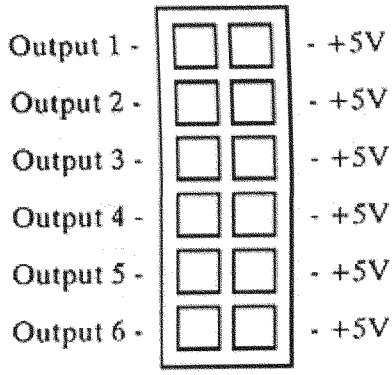
Warning: Use this method of power up at your own risk. Application of a voltage to pin 9 greater than 5.5volts will cause immediate destruction of unit and void the warranty.

Note: This applies to wide voltage units (V and VPT extensions) as well as to standard 5 volt units.

General Purpose Output (GPO)

Each of the GPO's are meant to be used as a pair. The positive side of the GPO's are connected to a power source of +5Vdc supplied by the module at 20mA. The negative side of the GPO's are capable of finding a path to ground through a 240 ohm resistor. This resistor will limit the current flow through a GPO to approximately 20mA in the event of a short circuit. If the device which is being driven by a GPO requires a relatively high current (such as a relay) and has an internal resistance of it's own greater than 250 ohms, then the 240 ohm resistor may be shorted. You will find this resistor directly below the negative pin of the general purpose output.

Note: This operation requires soldering. The GPO's do not have any over current or over/under voltage protection so care must be taken if the user decides to connect the negative side differently. For instance if the external device is a relay it must be fully clamped to absorb any generated back electro-motive force (EMF)



Configuring LK204-25

Default configuration is J1 and J2 installed. This configures the RS-232 to 19 200 baud and I²C to slave address 0x5C - depending on which connector is used. Please refer to the Appendix of this manual for programming notes.

```
RS-232 port:  J0, J1, J2 -  control baud rate
RS-232 format is 8N1 (8 characters, no parity, one stop bit
I²C port:  J0, J1, J2, J3 - sets slave peripheral address
```

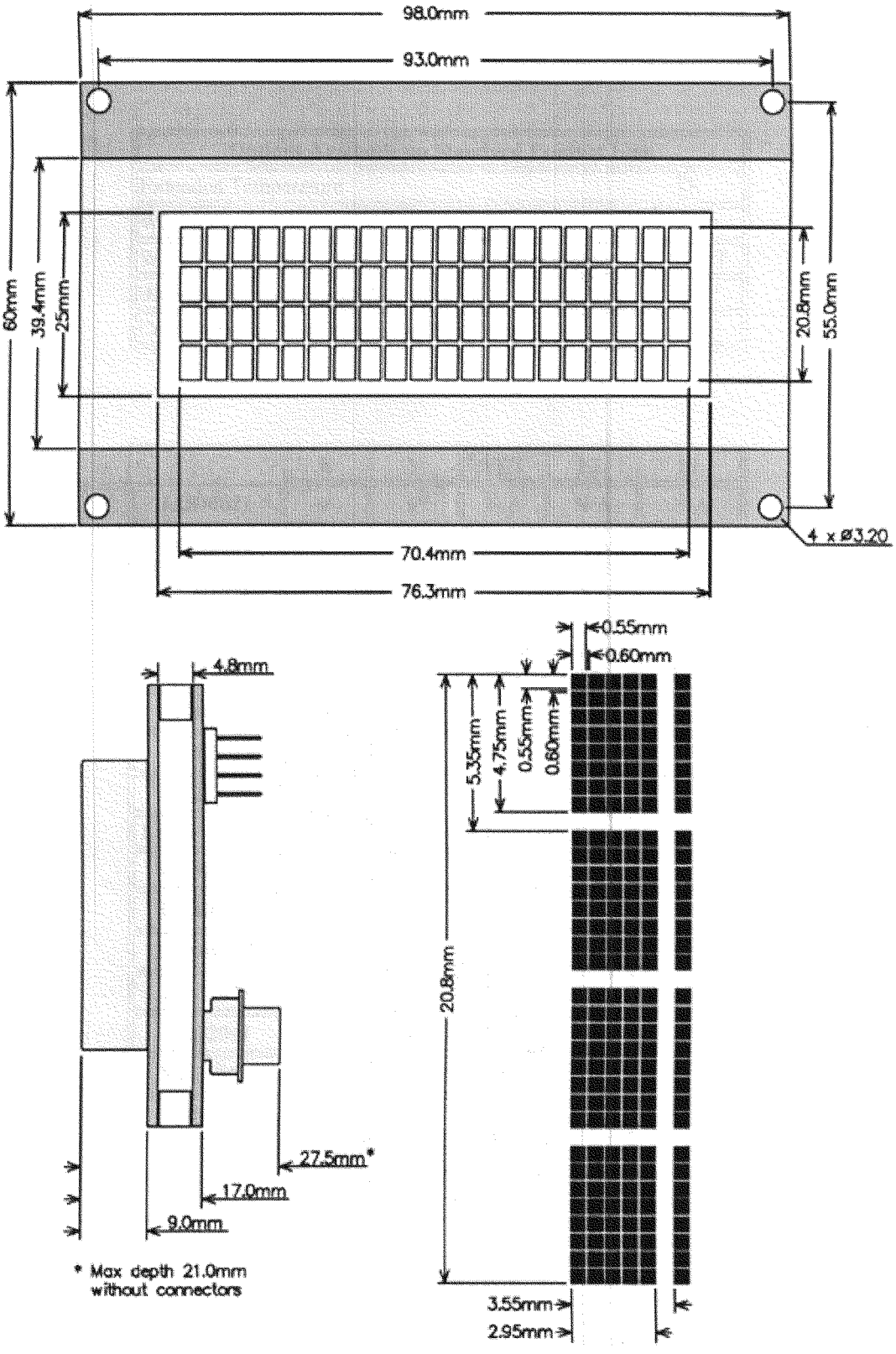
Baud Rate	Slave Address	J3	J2	J1	J0
1200	50H	Off	Off	Off	Off
	52H	Off	Off	Off	On
2400	54H	Off	Off	On	Off
	56H	Off	Off	On	On
9600	58H	Off	On	Off	Off
	5AH	Off	On	Off	On
19200	5CH	Off	On	On	Off
	5EH	On	On	On	On
1200	60H	On	Off	Off	Off
	62H	On	Off	Off	On
2400	64H	On	Off	On	Off
	66H	On	Off	On	On
9600	68H	On	On	Off	Off
	6AH	On	On	Off	On
19200	6CH	On	On	On	Off
	6EH	On	On	On	On

8 bit address including R/W bit

Environmental Specifications		
	Standard Temperature	Extended Temperature
Operating Temperature	0°C to +50°C	-20°C to +70°C
Storage Temperature	-20°C to +70°C	-40°C to +85°C
Operating Relative Humidity	90% max non-condensing	90% max non-condesing

Electrical Specifications	
Supply Voltage	4.75 - 5.25 Vdc (optional 8 - 15Vdc)
Supply Current	11 mA typical
Backlight Supply Current	90 mA typical

Optical Characteristics	
Number of Characters	80 (20Characters x 4 Lines)
Matrix Format	5 x 7 with underline
Display Area	76.3 x 25.2 mm (XxY)
Character Size	2.95 x 4.75mm (XxY), not including underline
Character Pitch	3.55 mm
Line Pitch	5.35 mm
Dot Size	0.55 x 0.55 mm (XxY)
Dot Pitch	0.60 x 0.60 mm (XxY)
LED Backlight Life	100 000 hours typical
Color of Illumination	Yellow Green


98.0mm
93.0mm
60mm
39.4mm
25mm
20.8mm
55.0mm
4 x ø3.20
70.4mm
76.3mm
4.8mm
27.5mm*
17.0mm
9.0mm
* Max depth 21.0mm
without connectors
0.55mm
0.60mm
5.35mm
4.75mm
0.55mm
0.60mm
20.8mm
3.55mm
2.95mm

Options

Options Available on Standard Product Line	
Extended Temperature	E
Wide Voltage	V
Wide Voltage with Efficient Switching Power Supply	VPT
Blue Electroluminescent Backlight	EL
Cold Cathode Fluorescent Lamp Backlight	FL

	E	V	VPT	EL	FL
LCD0821	✔	✔	N/A	N/A	N/A
LCD2021	✔	✔	N/A	N/A	N/A
LCD2041	✔	✔	N/A	N/A	N/A
LCD4021	✔	✔	N/A	N/A	N/A
LCD4041	✔	N/A	✔	✔	N/A
LK162-12	✔	✔	N/A	N/A	N/A
LK202-25	✔	✔	N/A	N/A	N/A
LK204-25	✔	✔	✔	N/A	N/A
LK204-25-PC	N/A	N/A	N/A	N/A	N/A
LK402-12	✔	✔	✔	N/A	N/A
LK404-55	✔	N/A	✔	✔	N/A
LK404-AT	✔	N/A	✔	✔	N/A
BLC2021	✔	✔	N/A	N/A	N/A
BLC2041	✔	✔	N/A	N/A	N/A
VFD2021	✔	✔	N/A	N/A	N/A
VFD2041	✔	✔	N/A	N/A	N/A
VK202-25	✔	✔	N/A	N/A	N/A
VK204-25	✔	✔	✔	N/A	N/A
BVF2021	✔	✔	N/A	N/A	N/A
BVF2041	✔	✔	N/A	N/A	N/A
GLC24064	✔	N/A	✔	N/A	N/A
GLK12232-25	✔	N/A	✔	N/A	✔
GLK12864-25	✔	N/A	✔	N/A	✔
GLK128128-25	✔	N/A	✔	N/A	✔

GLK24064-25	✔	N/A	✔	N/A	✔

Note: Blue Electroluminescent Backlight is not available with Wide Voltage with Efficient Switching Power Supply.